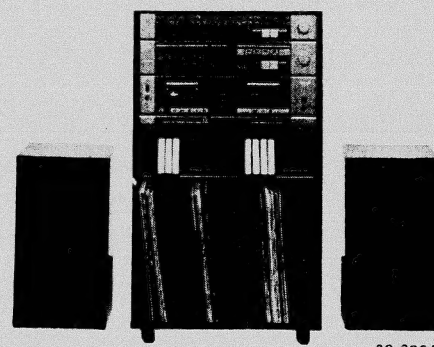


# Service Service Service

CX663

For Servicing Information concerning the cassette mechanism refer to Service Manuals: "Recorder Tape Decks RT72, RT77 and RT1".

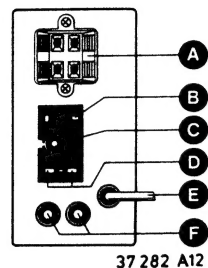
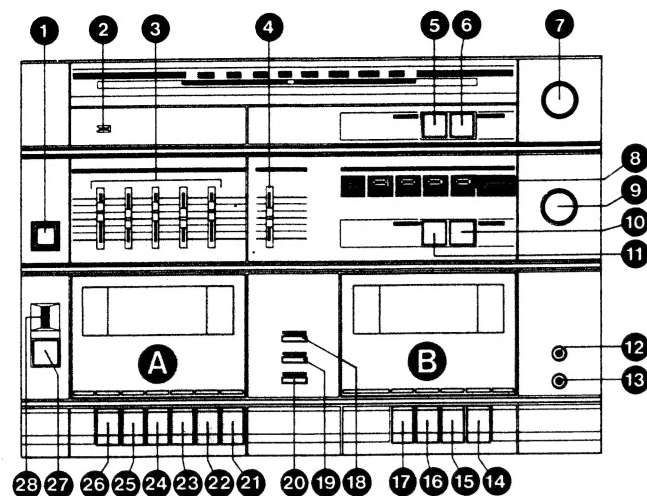
For Servicing Information concerning the record player refer to Service Manual F7046/00A.



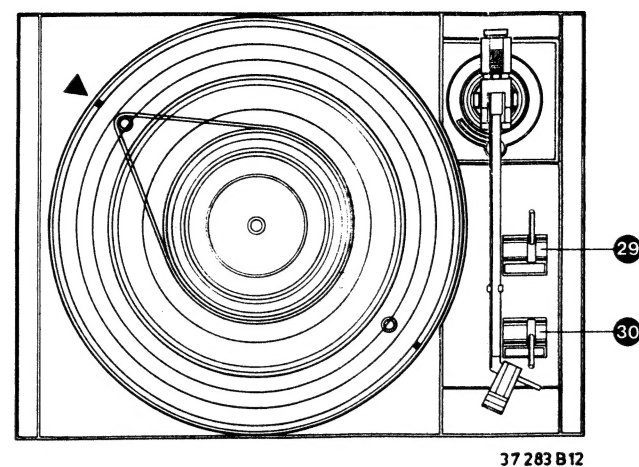
38 386A

# Service Manual

(GB)	(NL)	(F)	(D)	(I)	
TECHNICAL DATA	SPECIFICATIES	SPECIFICATIONS	TECHNISCHE DATEN	DATI TECNICI	
Power supply voltages	Voedingsspanningen	Alimentation	Versorgungsspannungen	Tensioni d'alimentazione	: 110,127,220,240 V 50/60 Hz ~
Power consumption	Opgenomen vermogen	Puissance absorbée	Leistungsaufnahme	Potenza assorbita	: ≤ 110 W/max.
Dimensions	Afmetingen	Dimensions	Abmessungen	Dimensioni	: 450x880x360 mm approx.
Wave ranges:	Golfbereiken:	Gammes d'ondes:	Wellenbereiche:	Gamme d'onda:	
FM	FM	FM	UKW	FM	: 87.5-108 MHz
MW	MW	PO	MW	OM	: 520-1605 kHz ( 577- 187 m)
LW	LW	GO	LW	OL	: 150- 255 kHz (2000-1177 m)
Sensitivity:	Gevoeligheid:	Sensibilité:	Empfindlichkeit:	Sensibilità:	
Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	: ( 1.6 μV mono, 26 dB S/N) ( 50 μV stereo, 46 dB S/N)
600 kHz AM	600 kHz AM	600 kHz AM	600 kHz AM	600 kHz AM	: (100 μV for 26 dB S/N)
Aerial input	Antenne ingang	Impédance d'antenne	Antennen-Impedanz	Ingresso antenna	: 75 Ω and 300 Ω
Output power (at 4 Ω load)	Uitgangsvermogen (4 Ω)	Puissance de sortie (4 Ω)	Ausgangsleistung (4 Ω)	Potenza d'uscita (con carico 4 Ω)	: 2x 13 W (1 kHz) D≤10%
Output impedance	Uitgangsimpedantie	Impédance de sortie	Ausgangsimpedanz	Impedenza d'uscita	: 4 Ω
Output impedance of headphones	Uitgangsimpedantie hoofdtelefoon	Impédance de sortie écouteurs	Kopfhörer-Ausgangs-impedanz	Impedenza d'uscita per cuffia	: 4-1000 Ω
<b>Cassette deck</b>	<b>Recorder</b>	<b>Magnétophone</b>	<b>Recorder</b>	<b>Piastra registratore</b>	
Speed	Snelheid	Vitesse	Geschwindigkeit	Velocità	: 4.76 cm/sec ± 2%
Wow and flutter	Wow en flutter	Pleurage et scintillement	Gleichlaufschwankungen	Wow e flutter	: ≤ 0.2%
<b>Record player</b>	<b>Platenspeler</b>	<b>Tourne-disque</b>	<b>Plattenspieler</b>	<b>Giradischi</b>	
Speed	Snelheid	Vitesse	Geschwindigkeit	Velocità	: 33 <sup>1</sup> /3-45 r.p.m
Wow and flutter	Wow en flutter	Pleurage et scintillement	Gleichlaufschwankungen	Wow e flutter	: ≤ 0.25%
Pick up cartridge	Element	Cartouche pick-up	Tonabnehmersystem	Testina	: GP215



GB			
1	On/off switch	SK1	
2	FM stereo indicator	6111	
3	Equalizer controls	63 Hz	3315
		250 Hz	3325
		1 kHz	3335
		4 kHz	3345
		16 kHz	3355
4	Balance control	3370	
5	MW/LW selection button	SK79	
6	AM/FM selection button	SK78	
7	Tuning knob		
8	Mode indicators	Phono	6333
		Tuner	6334
		CD/TV	6331
		Cass.	6332
9	Volume control	3369	
10	Mono/Rif selection button	SK76	
11	CD/TV function button	SK77	
12	Terminal socket stereo headphone	BU2	
	4-1000 Ω		
13	Terminal socket mono microphone	BU1	
14	Play button		
15	Stop/Eject button		
16	Wind/Cue button		
17	Rewind/Review button		
18	Dubbing B → A button	SK74	
19	Noise reduction button	SK73	
20	Tape type button	SK72	
21	Pause button		
22	Play button		
23	Stop/Eject button		
24	Wind/Cue button		
25	Rewind/Review button		
26	Recording button		
27	Zero reset button		
28	Counter		
29	Cue lever		
30	Speed selector switch	SK-H	
A	Terminals for loudspeakers 4 Ω	BU5-6	
B	Terminal sockets for AM aerial and earth	BU4	
C	Terminal sockets for FM aerial, 75 Ω	BU4	
D	Terminal sockets for FM aerial, 300 Ω	BU4	
E	Mains lead		
F	Terminal sockets for CD/TV	BU3	



NL			
1	Aan/Uit schakelaar	SK1	
2	FM stereo indicator	6111	
3	Klankkleurregelaars	63 Hz	3315
		250 Hz	3325
		1 kHz	3335
		4 kHz	3345
		16 kHz	3355
4	Balanceregelaar	3370	
5	Keuzetoets MW/LW	SK79	
6	Keuzetoets AM/FM	SK78	
7	Afstemknop		
8	Mode indicators	Phono	6333
		Tuner	6334
		CD/TV	6331
		Cass.	6332
9	Geluidssterkteregelaar	3369	
10	Mono/Rif keuzetoets	SK76	
11	CD/TV functietoets	SK77	
12	Aansluitbus stereo hoofdtelefoon	BU2	
	4-1000 Ω		
13	Aansluitbus mono microfoon	BU1	
14	Weergeeftoets		
15	Stop/Uitwerptoets		
16	Snelspoeltoets Wind/Cue		
17	Snelspoeltoets Rewind/Review		
18	Toets Dubbing B → A	SK74	
19	Ruisonderdrukkingstoets	SK73	
20	Keuzetoets voor bandsoort	SK72	
21	Pauzetoets		
22	Weergeefknop		
23	Stop/Uitwerptoets		
24	Snelspoeltoets Wind/Cue		
25	Snelspoeltoets Rewind/Review		
26	Opneemtoets		
27	Nulstelloets		
28	Bandteller		
29	Hefboom		
30	Toerentalkeuze	SK-H	
A	Luidsprekeraansluitklemmen 4 Ω	BU5-6	
B	Aansluitbussen voor AM-antenne en aarde	BU4	
C	Aansluitbus voor FM-antenne, 75 Ω	BU4	
D	Aansluitbus voor FM-antenne, 300 Ω	BU4	
E	Netsnoer		
F	Aansluitbussen CD/TV	BU3	

F			
1	Commutateur Marche/Arrêt	SK1	
2	Indicateur lumineux FM stéréo	6111	
3	Egaliseur graphique 5 bandes	63 Hz	3315
		250 Hz	3325
		1 kHz	3335
		4 kHz	3345
		16 kHz	3355
4	Balans stéréo	3370	
5	Sélecteur de gamme d'ondes PO/GO	SK79	
6	Sélecteur de modulation AM/FM	SK78	
7	Bouton d'accord		
8	Voyants lumineux par Signalisation des saurces	Phono	6333
		Tuner	6334
		CD/TV	6331
		Cass.	6332
9	Volume sonore	3369	
10	Interrupteur Mono/Rif	SK76	
11	Sélecteur CD/TV	SK77	
12	Prise pour casque stéréo 4-1000 Ω	BU2	
13	Prise pour microphone mono	BU1	
14	Touche démarrage		
15	Touche d'arrêt/éjection		
16	Touche bobinage rapide avant		
17	Touche bobinage rapide arrière		
18	Bouton de duplication Dubbing B → A	SK74	
19	Commutateur de réducteur du bruit	SK73	
20	Commande sélection type de bande	SK72	
21	Touche pause		
22	Touche démarrage		
23	Touche d'arrêt/éjection		
24	Touche bobinage rapide avant		
25	Touche bobinage rapide arrière		
26	Touche d'enregistrement		
27	Bouton de remise à zéro du compteur		
28	Compteur		
29	Lève bras		
30	Sélecteur de vitesse	SK-H	
A	Prises pour haut-parleurs 4 Ω	BU5-6	
B	Prise pour antenne extérieur AM et terre	BU4	
C	Prise pour antenne extérieur FM, 75 Ω	BU4	
D	Prise pour antenne FM, 300 Ω	BU4	
E	Cordon secteur		
F	Prises d'entrées auxiliaires CD/TV	BU3	

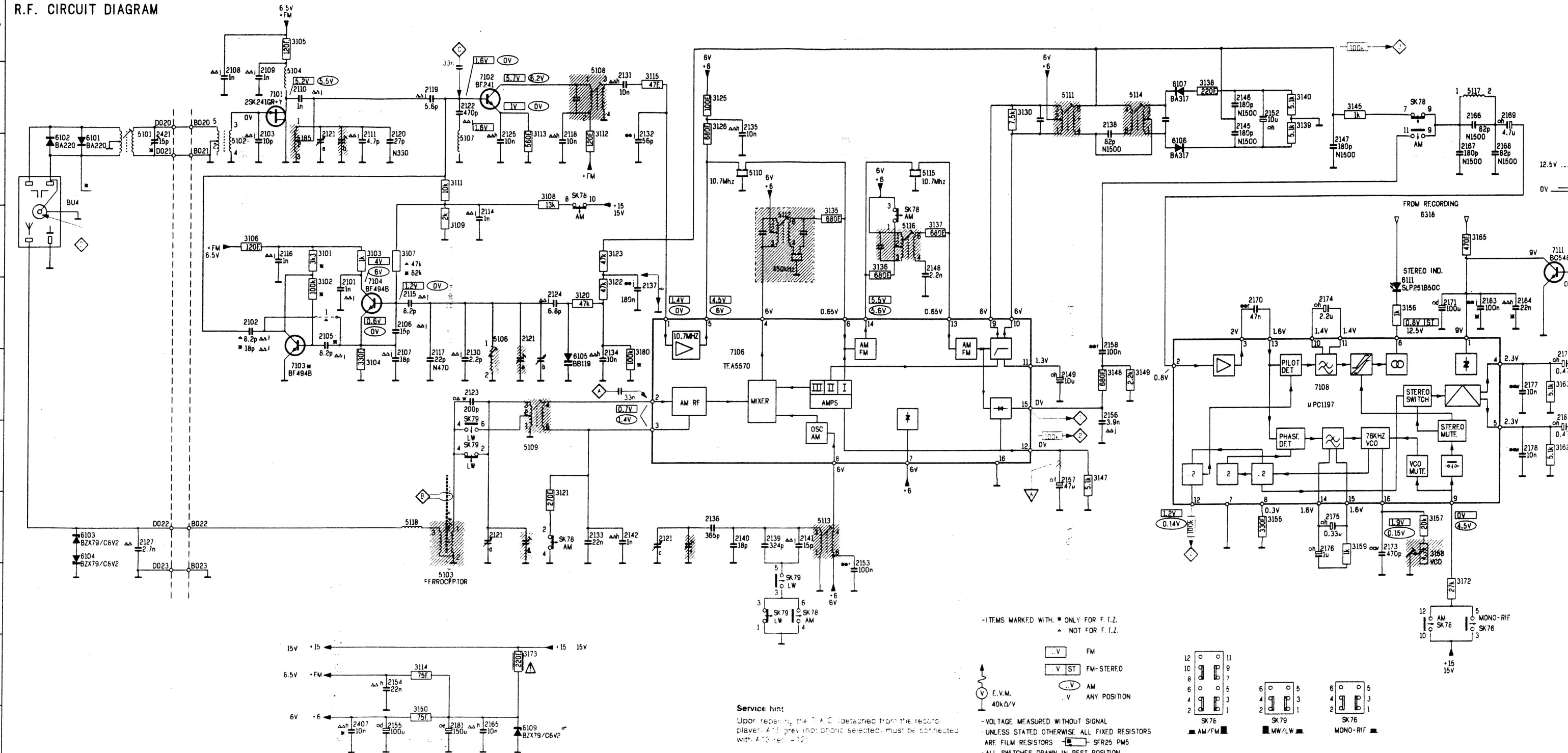
I			
1	Interruttore acceso/spento	SK1	
2	Indicatore FM stereo	6111	
3	Controlli della tonalità	63 Hz	3315
		250 Hz	3325
		1 kHz	3335
		4 kHz	3345
		16 kHz	3355
4	Controllo del bilanciamento	3370	
5	Selettore MW/LW	SK79	
6	Selettore AM/FM	SK78	
7	Manopola di sintonia		
8	Indicatori del modo	Phono	6333
		Tuner	6334
		CD/TV	6331
		Cass.	6332
9	Controllo del volume	3369	
10	Selettore Mono/Rif	SK76	
11	Selettore CD/TV	SK77	
12	Presa per cuffia stereo phones	BU2	
	4-1000 Ω		
13	Presa per microfono mono	BU1	
14	Tasto di riproduzione		
15	Tasto di arresto/espulsione		

D			
1	Netz-Ein/Aus-Schalter	SK1	
2	FM stereo-Anzeige	6111	
3	Klangfilter	63 Hz	3315
		250 Hz	3325
		1 kHz	3335
		4 kHz	3345
		16 kHz	3355
4	Balance	3370	
5	MW/LW Wellenbereichsschalter	SK79	
6	AM/FM Wählschalter	SK78	
7	Tuning-Knopf		
8	Programmquellen-Anzeiger	Phono	6333
		Tuner	6334
		CD/TV	6331
		Cass.	6332
9	Lautstärke-Einsteller	3369	
10	Mono/Rif Schalter	SK76	
11	CD/TV Wiedergabe-Schalter	SK77	
12	Anschluss für Stereokopfhörer	BU2	
	4-1000 Ω		
13	Anschluss für ein Mono-Mikrofon	BU1	
14	Wiedergabe-Schalter		
15	Stop/Eject Taste		
16	Wind/Cue schneller Bandvorlauf		
17	Rewind/Review schneller Bandrücklauf		
18	Dubbing B → A-Schalter	SK74	
19	Noise Red-Schalter	SK73	
20	Bandsorten-Einstellung	SK72	
21	Pause-Schalter		
22	Wiedergabe/Start-Schalter		
23	Stop/Eject-Schalter		
24	Schneller Bandvorlauf		
25	Schneller Bandrücklauf		
26	Record-Schalter		
27	Rücksteltaste		
28	Zählwerk		
29	Tonarmlift		
30	U/min. Drehzahlwähler	SK-H	
A	Lautsprecher-Ausgänge 4 Ω	BU5-6	
B	Anschluss für eine AM-Antenne mit Erde	BU4	
C	Anschluss für eine FM-Antenne, 75 Ω	BU4	
D	Anschluss für eine FM-Antenne, 300 Ω	BU4	
E	Netzanschlussleitung		
F	CD/TV-Anschlussbuchsen	BU3	

16	Tasto di avvolgimento rapido		
17	Tasto di riavvolgimento rapido		
18	Tasto di capiaturo Dubbing B → A	SK74	
19	Tasto di soppressione del fruscio	SK73	
20	Selettore del tipo di nastro	SK72	
21	Tasto di pausa		
22	Tasto di riproduzione/avvolgimento		
23	Tasto di arresto/espulsione		
24	Tasto di avvolgimento rapido		
25	Tasto di avvolgimento rapido		
26	Tasto di registrazione		
27	Tasto di azzeramento		
28	Contanastro		
29	Leva		
30	Selettore dei giri	SK-H	
A	Morsetti per casse acustiche 4 Ω	BU5-6	
B	Prese per antenne AM e terro	BU4	
C	Prese per antenna FM, 75 Ω	BU4	
D	Prese per antenna FM, 300 Ω	BU4	
E	Cordone di rete		
F	Prese CD/TV	BU3	



R.F. CIRCUIT DIAGRAM



RF part

+15 = 15 V  
+FM = 6.5 V  
+6 = 6 V

7101

9 0 V  
D 5.2 V 5.5 V  
S 1

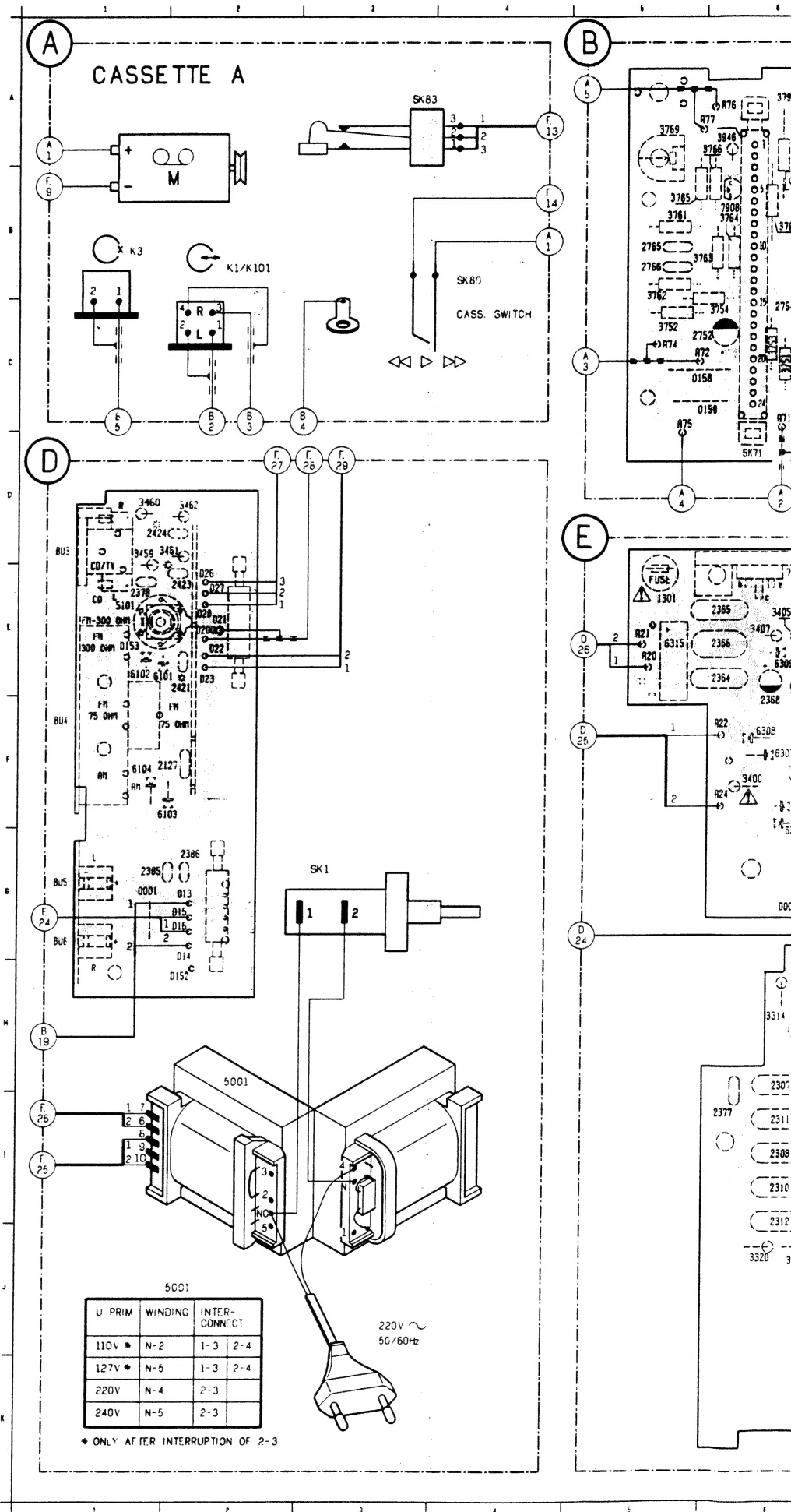
7102

e 1 V  
b 1.6 V  
c 5.7 V 6

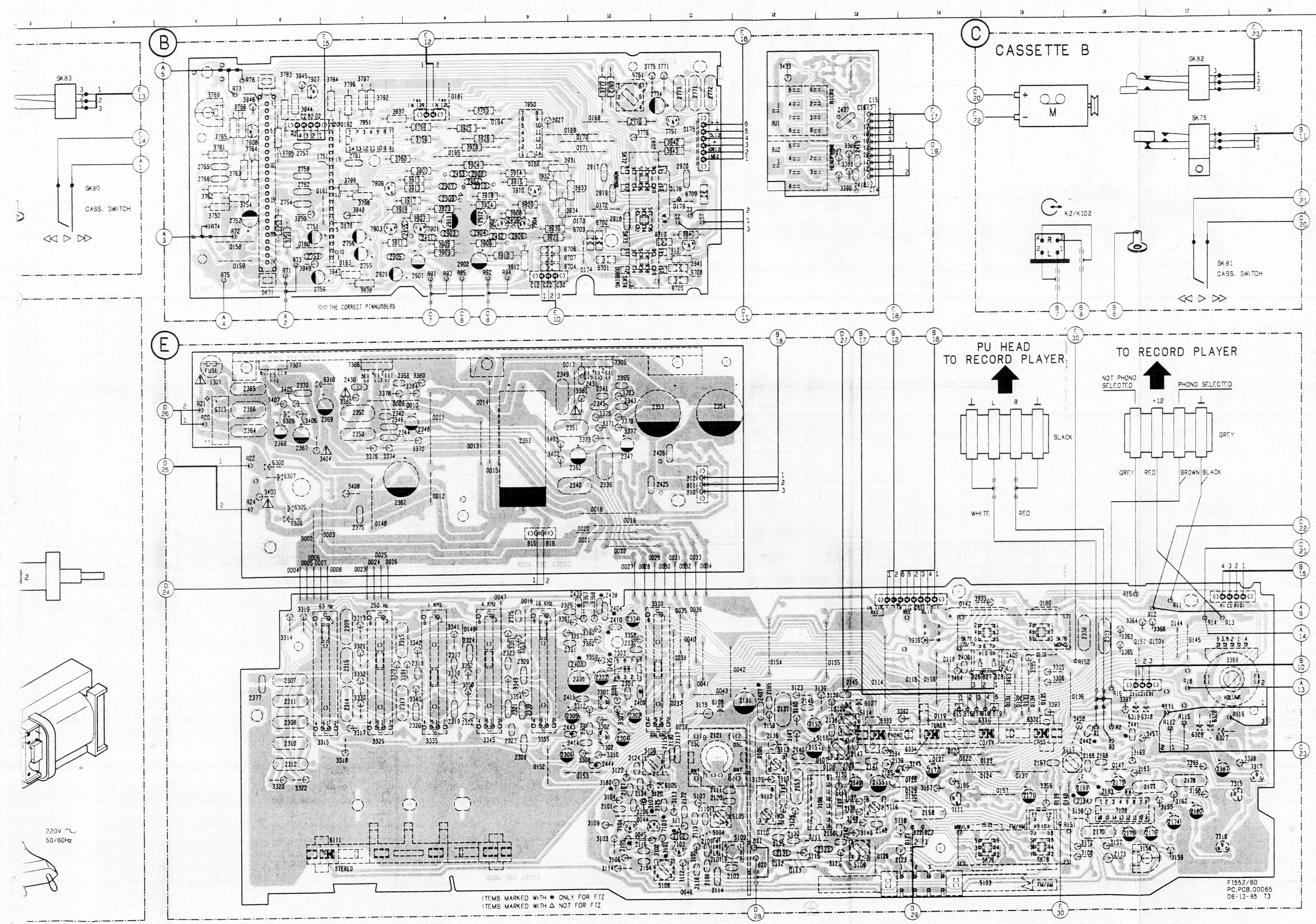
e	1
b	0.7 V
c	0 V



**Service hint:**  
Upon repairing the T.A.C. (detached from the record player) A15-grey (not phono selected) must be connected with A13-red (+12).



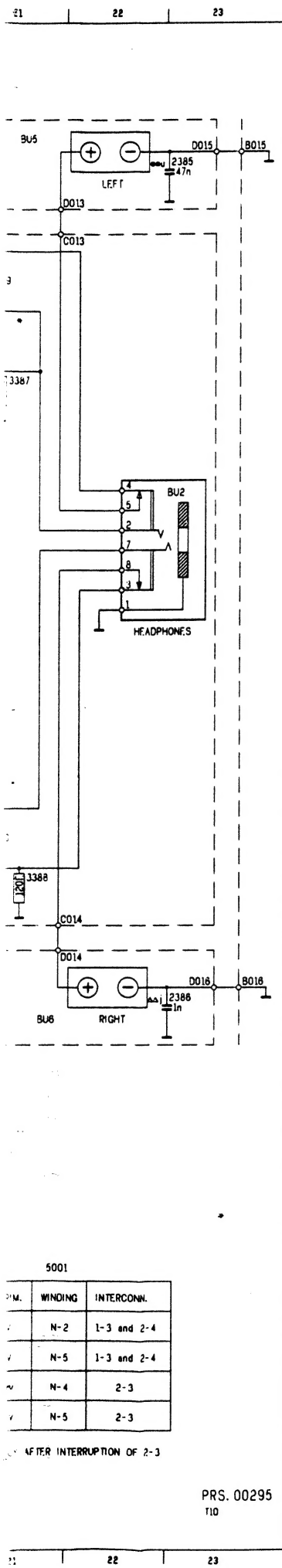






[illegible]





1301	K17	3368	H15
2301	D 6.	3369	H15
2302	I 6	3369	B15
2303	C 5	3370	I15
2304	C 5	3370	C15
2305	C 7	3371	B15
2306	I 7	3372	H15
2307	D 7	3373	B17
2308	I 7	3374	H17
2309	R12	3375	B17
2310	O12	3376	H17
2311	R11	3377	O17
2312	F11	3378	I17
2313	R11	3379	O19
2314	G11	3380	J19
2315	B12	3381	C19
2316	G12	3382	I20
2317	C12	3383	O19
2318	H12	3384	I19
2319	B11	3387	O21
2320	H11	3388	I21
2321	C11	3389	C21
2322	I11	3390	I21
2323	C12	3400	H17
2324	I12	3402	K14
2325	O11	3403	K14
2326	I11	3404	M14
2327	C11	3405	M14
2328	I11	3406	M13
2329	O11	3407	M13
2330	I11	3408	O13
2331	C13	3433	F 5
2332	I13	3457	B 4
2333	B14	3458	I 4
2334	G14	3459	D 1
2335	L11	3460	K 1
2337	C15	3461	D 2
2338	I15	3462	K 2
2339	B16	3463	D 3
2340	H16	3464	K 3
2341	C17	5001	K18
2342	H17	6305	N15
2343	C17	6306	N14
2344	H17	6307	C15
2345	C17	6308	O14
2346	I17	6309	N13
2347	O17	6310	N12
2348	J17	6315	K15
2349	R18	7301	C 6
2350	G18	7302	I 5
2351	C19	7307	M13
2352	I19	BU1	F 3
2353	B19	BU2	E23
2354	H19	BU3	K 1
2355	O18	BU3	D 1
2356	I18	BU5	R21
2361	O12	BU6	J21
2362	K13	SK-1	M19
2363	L14	SK77	J 5
2364	L15	SK77	K 5
2365	K14	SK77	K 5
2366	K16	SK77	D 5
2367	N14		
2368	N13		
2369	N11		
2370	M13		
2375	O12		
2377	O13		
2378	K 2		
2385	B23		
2386	J23		
2403	C14		
2404	I14		
2405	D 3		
2406	K 3		
2409	B13		
2410	H13		
2414	H 6		
2415	C 6		
2418	I21		
2419	C21		
2423	D 2		
2424	K 2		
2425	C20		
2426	I20		
2430	H19		
2431	B19		
2435	R14		
2437	F 5		
2438	J14		
2439	E14		
2441	B 4		
2442	I 4		
2443	D 6		
2444	I 6		
3301	C 6		
3302	I 6		
3305	D 5		
3306	H 5		
3307	B 6		
3308	H 6		
3310	H 6		
3312	B 6		
3313	D 8		
3314	J 8		
3315	J 7		
3315	D 7		
3317	C 8		
3318	I 8		
3319	R12		
3320	F12		
3321	R12		
3322	F12		
3325	J 8		
3325	D 8		
3329	R12		
3330	O12		
3331	R12		
3332	O12		
3335	J 9		
3335	O 9		
3339	B12		
3340	H12		
3341	B12		
3342	H12		
3345	O10		
3345	J10		
3349	C12		
3350	I12		
3351	C12		
3352	I12		
3353	O12		
3354	I12		
3355	J10		
3355	O10		
3357	C13		
3358	H13		
3359	R13		
3360	O13		
3361	L12		
3362	L12		
3363	B15		
3364	H15		
3365	C15		
3366	I15		
3367	B15		

# AF part

## 7301

e	
b	0.65 V
c	7 V

## 7302

e	
b	0.65 V
c	7 V

## 7303

1	7.5 V
2	6 V
3	7.3 V
4	
5	7.3 V
6	6 V
7	7.5 V
8	15 V

## 7305

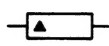
1	15 V
2	17 V
3	
4	17 V
5	35 V

## 7306

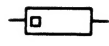
1	15 V
2	17 V
3	
4	17 V
5	35 V

## 7307

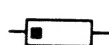
e	15 V
b	16.5 V
c	34 V



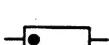
Carbon film  
0.2 W 70°C 5%



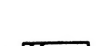
Carbon film  
0.33 W 70°C 5%



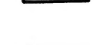
Metal film  
0.33 W 70°C 5%



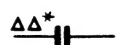
Carbon film  
0.5 W 70°C 5%



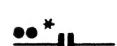
Carbon film  
0.67 W 70°C 5%



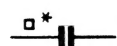
Carbon film  
1.15 W 70°C 5%



Ceramic plate  
Tuning ≤ 120 pF NP.0 2%  
Others -20/+80%



Polyester flat foil 10%



Metalized polyester  
flat film 10%



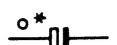
Polyester flat foil  
small size (Mylar) 10%



Polysterene film/foil 1%



Tubular ceramic



Miniature single

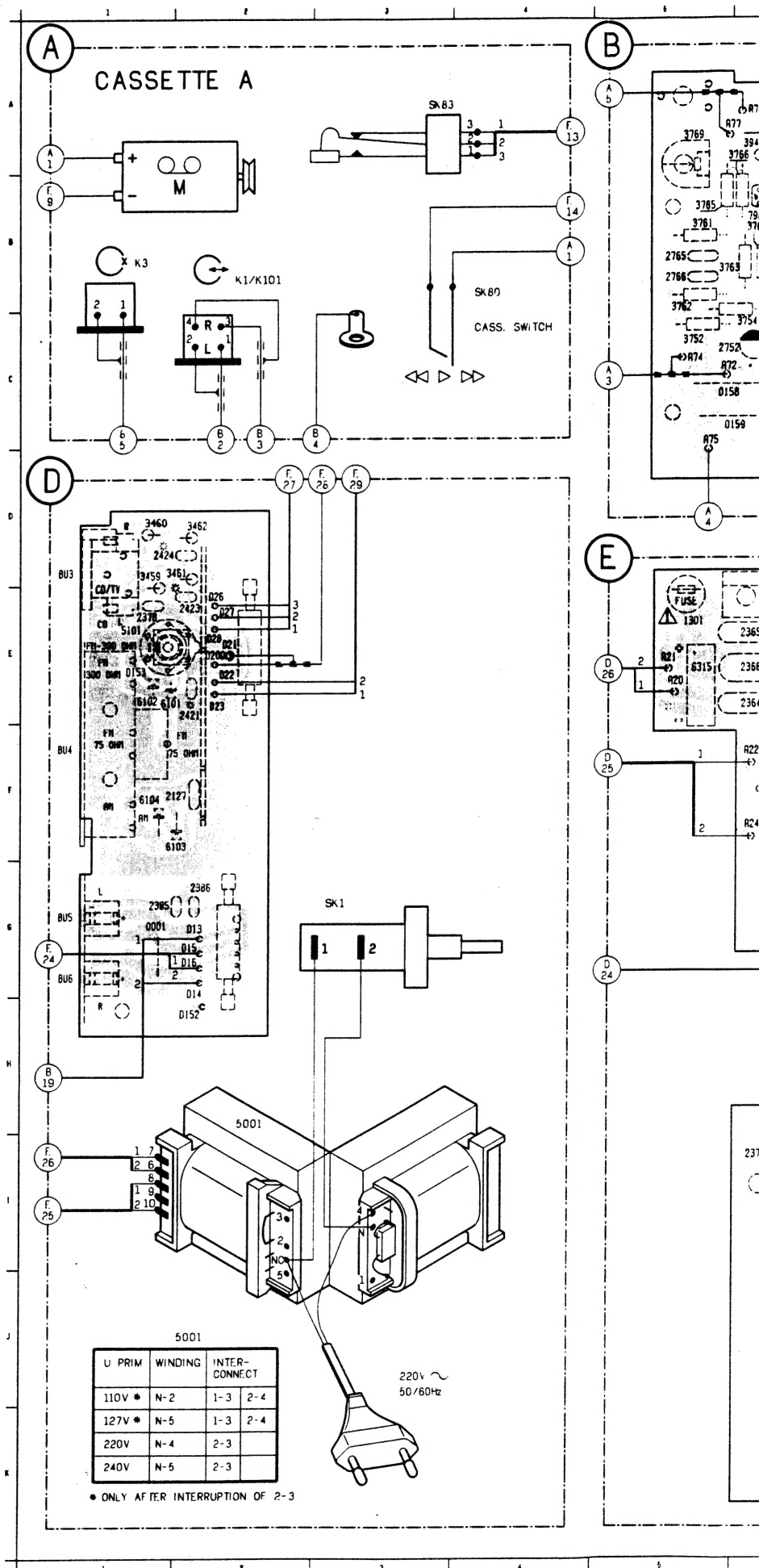


Subminiature  
tantalum ± 20%

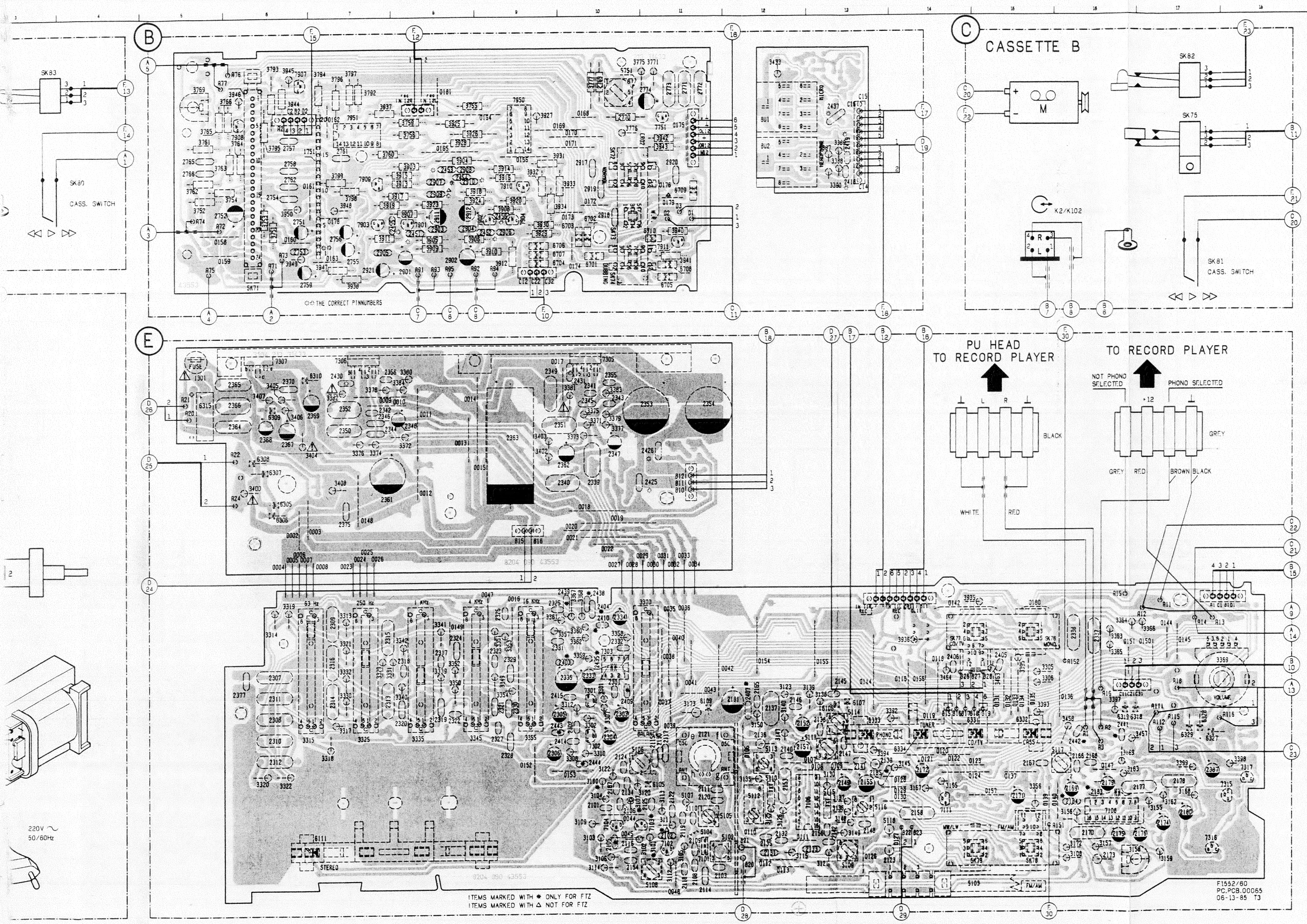
- \*a = 2.5 V
- b = 4 V
- c = 6.3 V
- d = 10 V
- e = 16 V
- f = 25 V
- g = 40 V
- h = 63 V
- i = 100 V
- l = 125 V
- m = 150 V
- n = 160 V
- q = 200 V
- r = 250 V
- s = 300 V
- t = 350 V
- u = 400 V
- v = 500 V
- w = 630 V
- x = 1000 V
- A = 1.6 V
- B = 6 V
- C = 12 V
- D = 15 V
- E = 20 V
- F = 35 V
- G = 50 V
- H = 75 V
- I = 80 V

# Service hint.

Upon repairing the T.A.C. (detached from the record-player) A15-grey (not phono selected) must be connected with A13-red (+12).



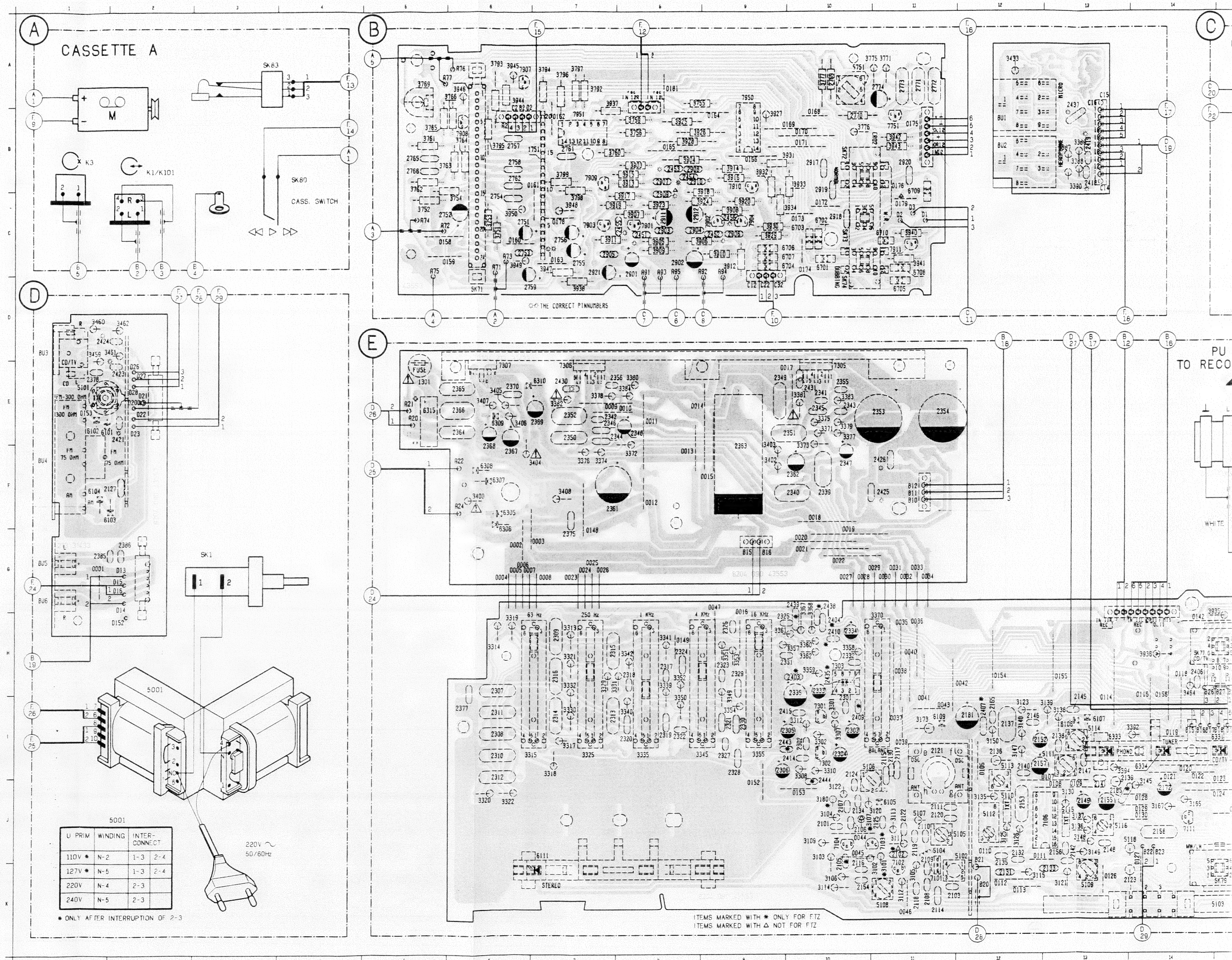




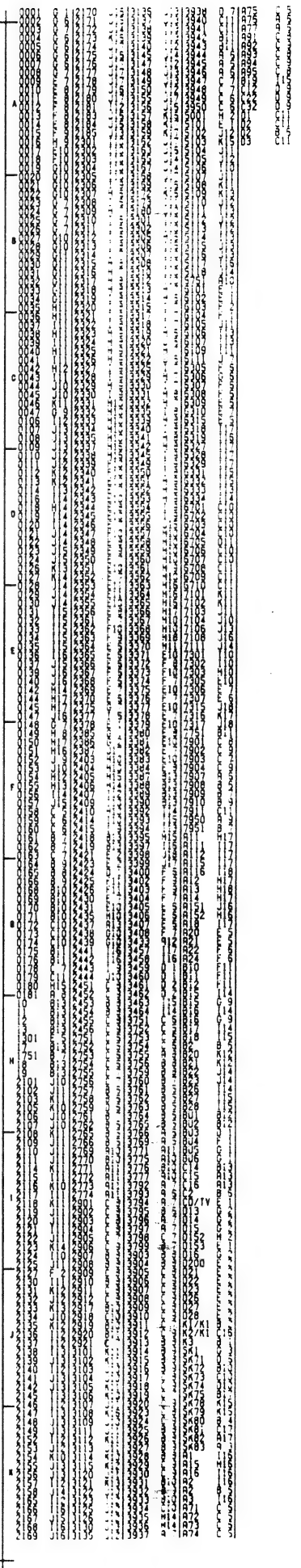
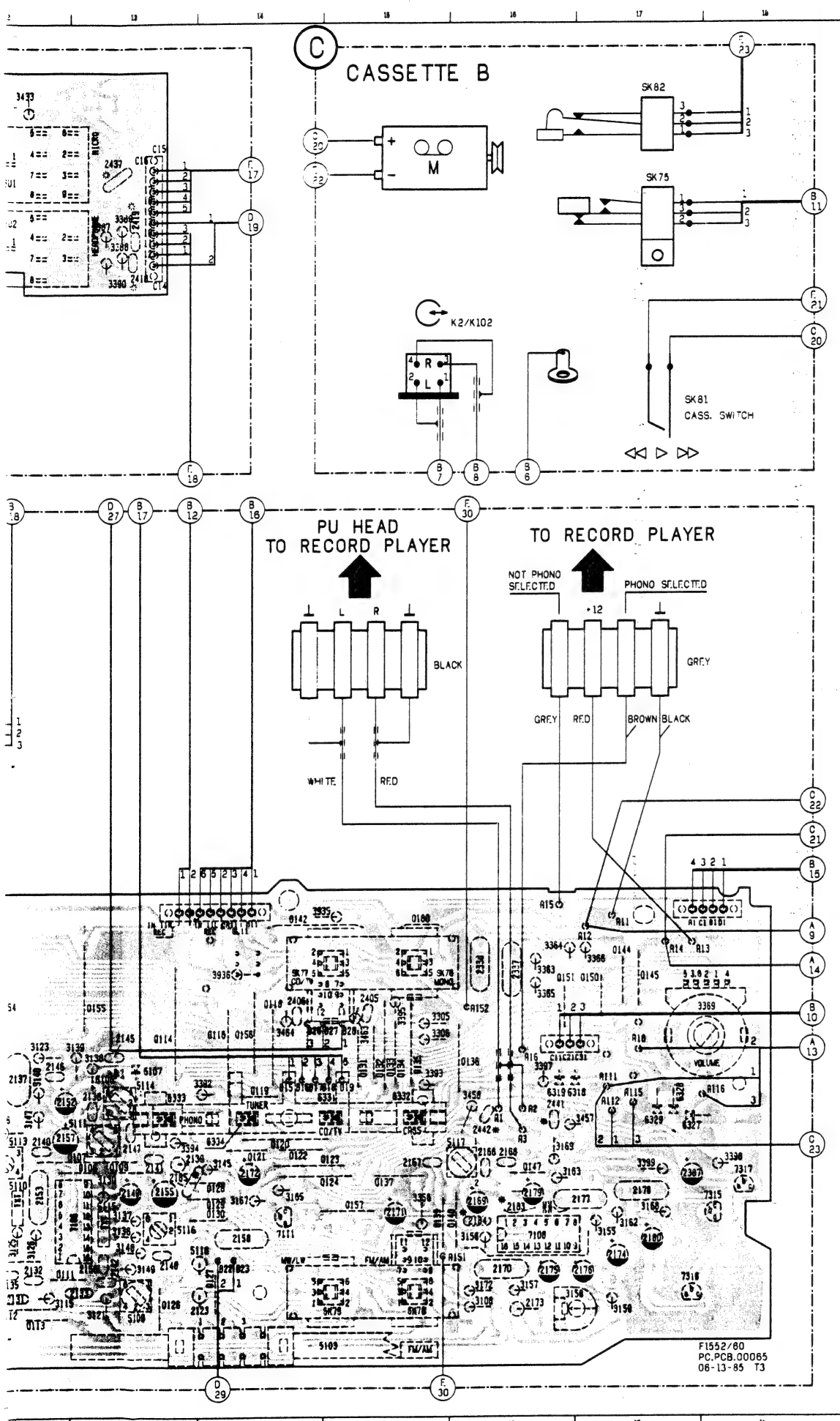


# Service hint:

Upon repairing the T.A.C. (detached from the record player) A15-grey (not phono selected) must be connected with A15-red (+12).







ALIGNMENT

General

- During the alignment, keep the levels of the injected signals as low as possible.
- Alignment of IF stages requires a sweep signal.  
For FM: Apply a 10.7 MHz signal with a sweep of 300 kHz at a frequency of 50 Hz.  
For AM: Apply a 450 kHz (468 kHz) signal with a sweep of 10 kHz at a frequency of 50 Hz.
- Switch SK76 position: stereo.














Equipment required

- RF generator
- Oscilloscope
- DC-millivoltmeter
- AC-millivoltmeter
- Frequency counter


- GB
- 1Pla  
of
- 2Ad
- 3Ad
- A Sw
- B Op

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cr 
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- 3Aju  
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- A Me  
cor
- B Ou




FM-IF

SK switch	 signal	 to	 tune in	DETUNE	 adjust	 oscilloscope	 DC mV meter
FM SK-78	10.7 MHz Δf 300 kHz (50 Hz)			<div>A</div> <div>B</div>		<div>2</div> <div>1</div> <div>center</div> 	
	fo=f generator Δf = 10 kHz (50 Hz)				5108	<div>2</div> <div>2</div> <div>symmetrical</div> <div>MAX.</div> 	
	10.7 MHz Δf 300 kHz (50 Hz) 1 mV				5114 5111	<div>3</div> <div>3</div> <div>symmetrical</div> 	
	10.7 MHz No sweep				5114		DC  0 V ± 30 mV
							

FM-oscillator

FM SK-78	87.63 MHz mod. 1 kHz Δf 22.5 kHz		max. cap. 2121		5106	<div>3</div> max. ~	
	108.0 MHz mod. 1 kHz Δf 22.5 kHz		min. cap. 2121		2121e		

FM-RF antenna section


FM SK-78	87.63 MHz mod. 1 kHz Δf 22.5 kHz				5105	<div>3</div> max. ~	
	108.0 MHz mod. 1 kHz Δf 22.5 kHz				2121h		
							

Stereo-decoder


FM SK-78	No signal				3158	Counter <div>4</div> 19 kHz ± 100 Hz	
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GB

- 1 Place the peak of the band-pass curve in the middle of the picture by shifting the sweep frequency.
- 2 Adjust for maximum height and symmetry.
- 3 Adjust for linearity and symmetry of the S-curve.
- A Switch off A.F.C. by short-circuiting 2137.
- B Open solder bridge 


F

- 1 En décalant la fréquence de wobulation, placer la crête de la courbe de réponse au centre de l'écran.
- 2 Ajuster pour avoir une courbe d'amplitude maximale et de bonne symétrie.
- 3 Ajuster pour avoir une courbe en S de bonne linéarité et de bonne symétrie.
- A Mettre la C.A.F. hors service en court-circuitant, le condensateur 2137.
- B Ouvrir le pontet 

NL

- 1 De top van de doorlaat curve, door verschuiven van wobbelfrequentie, in het midden van het scherm plaatsen.
- 2 Afregelen op maximum hoogte en symmetrie.
- 3 Afregelen op lineariteit en symmetrie van de S-kurve.
- A A.F.C. uitschakelen door 2137 kort te sluiten.
- B Open soldeerbrug 

I

- 1 Portare la cresta della curva di risposta al centro dello schermo per mezzo di scivolamento della frequenza di modulazione.
- 2 Regolare per altezza e simmetria massima.
- 3 Regolare per linearità e simmetria della curva ad S.
- A Mettere il C.A.F. fuori funzionamento cortocircuitando il condensatore 2137.
- B Aprire il ponticello 

D

- 1 Die Spitze der Durchlasskurve in der Mitte des Bildes legen dadurch, dass man die Wobbelfrequenz verschiebt.
- 2 Abgleichen auf Maximalhöhe und Symmetrie.

Abgleichen auf Linearität und Symmetrie der S-Kurve.

GB Electrical measurements and adjustments "Recorder"

- A The maximum permissible speed deviation is  $\pm 2\%$ . Moreover, the wow and flutter value can be read. This value should not exceed 0.35%.
- B Connect the Service cassette set to the apparatus via one of the loudspeaker connectors.
  - Set the apparatus to the play back position with the 50 Hz cassette from the cassette service set.
  - With R at the back of the motor, adjust for minimum variation of the indicator reading.
- C If the accuracy requirements are less stringent a high quality ferro (normal) cassette may be used as an alternative.
- D If the adjustment is correct the frequency response curve will be similar to curve b in Fig. 2 (distortion  $\leq 5\%$ ).
- E Switch off A.L.C. by short-circuiting electrolytic capacitor 2759.
- F Mount a resistor of 20E between point 2(4) of K2 (K102) and A93 (A94).

F Mesurer électriques et réglages "Recorder"

- A L'écart de vitesse maximum admissible est de  $\pm 2\%$ . Le taux de pleurage pourra également être lu lors de cette mesure.
  - Cette valeur ne doit pas dépasser 0,35%.
- B Relier par l'intermédiaire d'un des connecteurs de haut-parleur la section cassette Service à l'appareil.
  - Positionner en reproduction et faire passer une cassette 50 Hz de la section cassette Service.
  - Régler grâce à R à l'arrière du moteur pour que la variation sur l'indicateur soit minimum.
- C Si les exigences du point de précision, ne sont pas tellement élevées, une cassette au ferro (normale) de bonne qualité, pourra également convenir.
- D Si le réglage est correctement effectué, la courbe de fréquence devra être égale à la courbe b de la Fig. 2 (distorsion  $\leq 5\%$ ).
- E Mettre la A.L.C. hors service en court-circuitant le condensateur chimique 2759.
- F Monter une résistance de 20E entre le point 2(4) de K2 (K102) et A93 (A94).

A

A.F.C.-Regelung ausschalten durch kurzschluss von 2137.

B

Lötbrücke  öffnen.

"Bei notwendigem Abgleich ist das Gerät auf die gesetzlich vorgeschriebenen Eckfrequenzen abzugleichen".

>87.2 MHz <108.5 MHz.














NL Elektrische metingen en instellingen "Recorder"

- A De hoogst toelaatbare snelheidsafwijking bedraagt  $\pm 2\%$ . Tevens kan bij deze meting de jengelwaarde afgelezen worden.
  - Deze waarde mag niet hoger zijn dan 0.35%.
- B Via een van de luidsprekerconnectors het Service-cassettedeel met het apparaat verbinden.
  - Zet het apparaat in de weergeefstand met de 50 Hz cassette uit het Service-cassettedeel.
  - Met R aan de achterzijde van de motor op minimale variatie van de indicatoraflezing instellen.
- C Als de nauwkeurigheidseisen minder streng zijn, kan als alternatief een ferro-cassette (normal) van hoge kwaliteit gebruikt worden.
- D Als de instelling juist is, zal de frequentiekromme gelijk zijn aan kromme b in Fig. 2 (vervorming  $\leq 5\%$ ).
- E A.L.C. regeling uitschakelen door elco 2759 kort te sluiten.
- F Plaats een weerstand van 20E tussen punt 2(4) van K2 (K102) en A93 (A94).



D Elektrische Messungen und einstellungen "Recorder"

- A Die höchstzulässige Geschwindigkeitsabweichung beträgt  $\pm 2\%$ . Auch lässt sich bei dieser Messung der Jaulwert ablesen.
  - Dieser Wert darf 0,35% nicht überschreiten.
- B Über einen der Lautsprecherkonnektoren den Service-Cassettenteil mit dem Gerät verbinden.
  - Mit dem 50-Hz-Cassette aus dem Service-Cassettenteil das Gerät in die Wiedergabestellung bringen.
  - Mit R auf der Rückseite des Motors auf Mindest-Schwankung der Anzeigerablesung einstellen.
- C Wenn die Genauigkeitsanforderungen weniger streng sind, kann als Alternative eine Hochleistungs-Ferrocassette (Normal) benutzt werden.
- D Wenn die Einstellung richtig ist, wird der Frequenzgang gleich der kurve b in Bild 2 (Verzerrung  $\leq 5\%$ ) sein.
- E A.L.C. ausschalten durch Kurzschluss von Elko 2759.
- F Einer Widerstand von 20E zwischen Punkt 2(4) von K2 (K102) und A93 (A94) montieren.




AM-IF

SK						
switch	signal	to	tune in	adjust	oscilloscope	AC mV meter
AM SK-78 MW SK-79	450 kHz $\Delta f$ 10 kHz (50 Hz)		2121 max. cap.		 center  fo	
	fo=f generator $\Delta f$ = 10 kHz (50 Hz)			5112 5116	Symmetrical  MAX.  	

AM-RF-oscillator


AM SK-78 LW SK-79	147 kHz mod: 1 kHz 30%		2121 max. cap.	5113	 max. ~
AM SK-78 MW SK-79	1635 kHz mod: 1 kHz 30%		2121 min. cap.	2121f	

AM-RF-antenna section

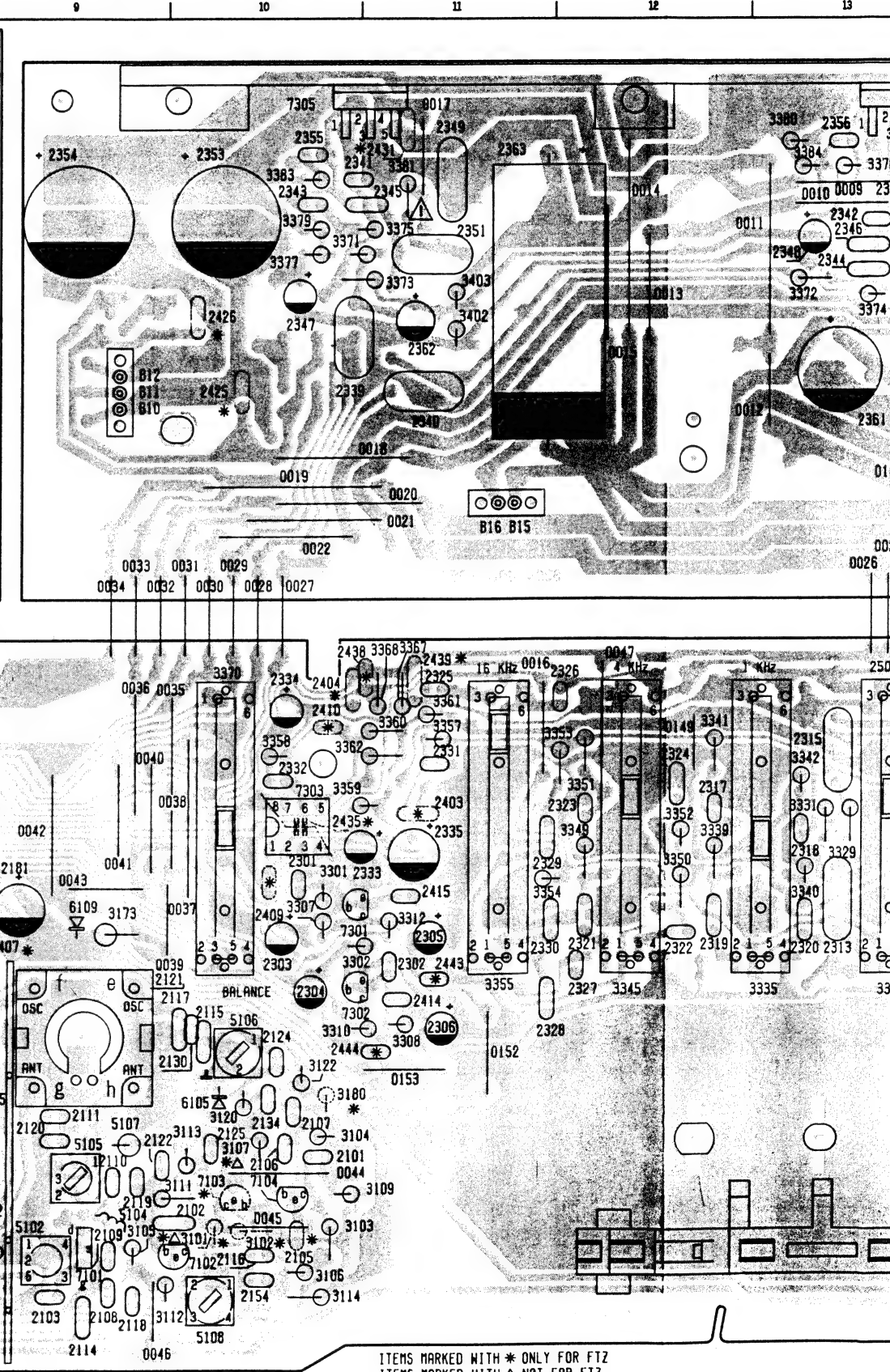
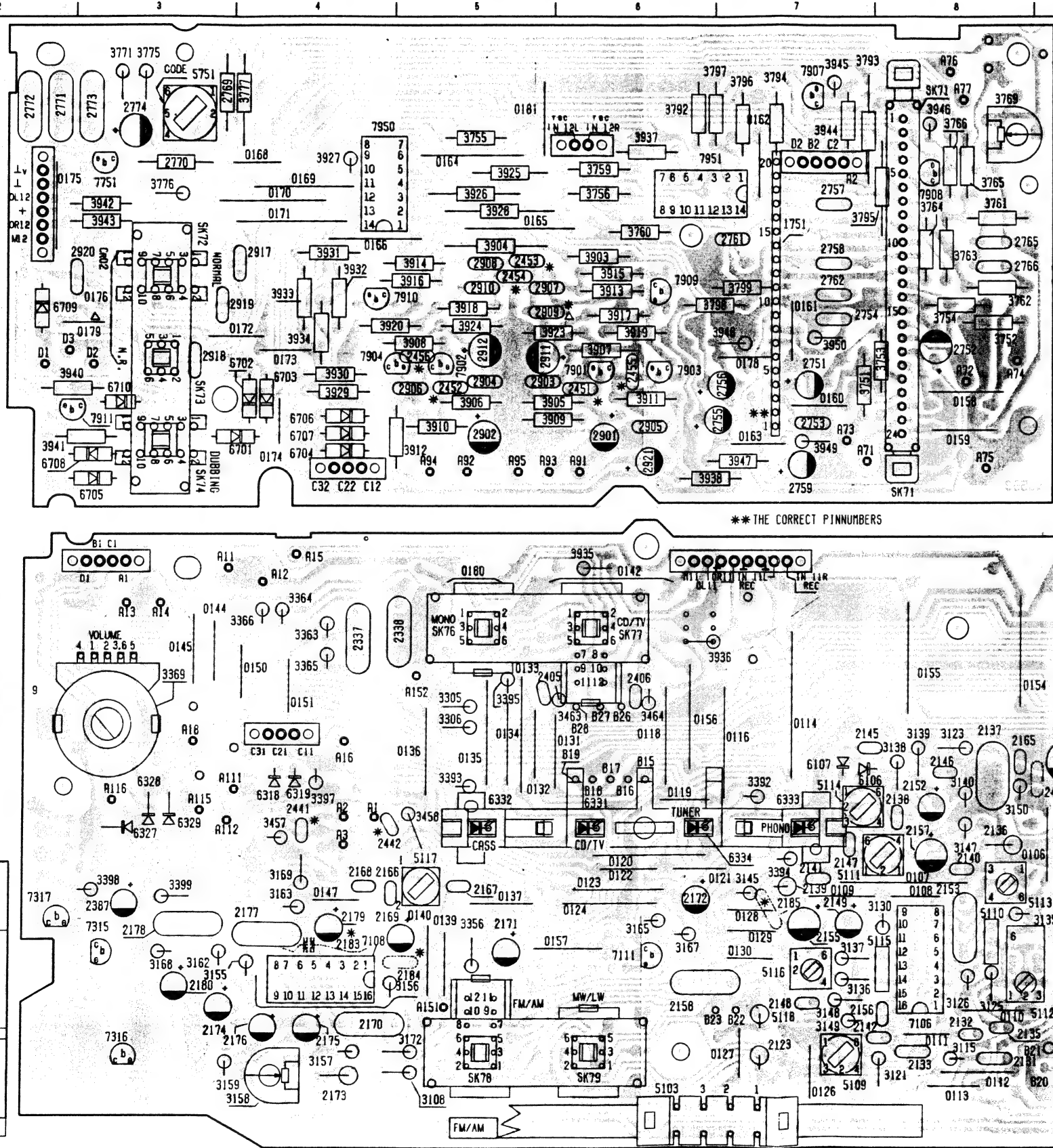
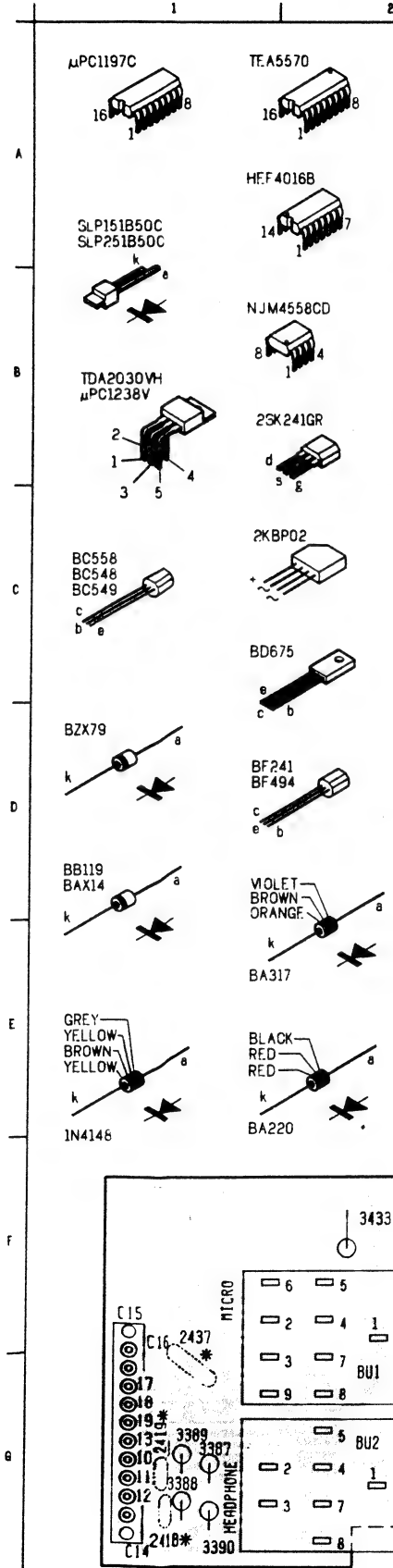
AM SK-78 MW SK-79	560 kHz mod: 1 kHz 30%			5103	 max. ~
	1500 kHz mod: 1 kHz 30%			2121g	
AM SK-78 LW SK-79	155 kHz mod: 1 kHz 30%			5109	

Repeat - Herhalen - Répéter - Wiederholen - Ricominciare

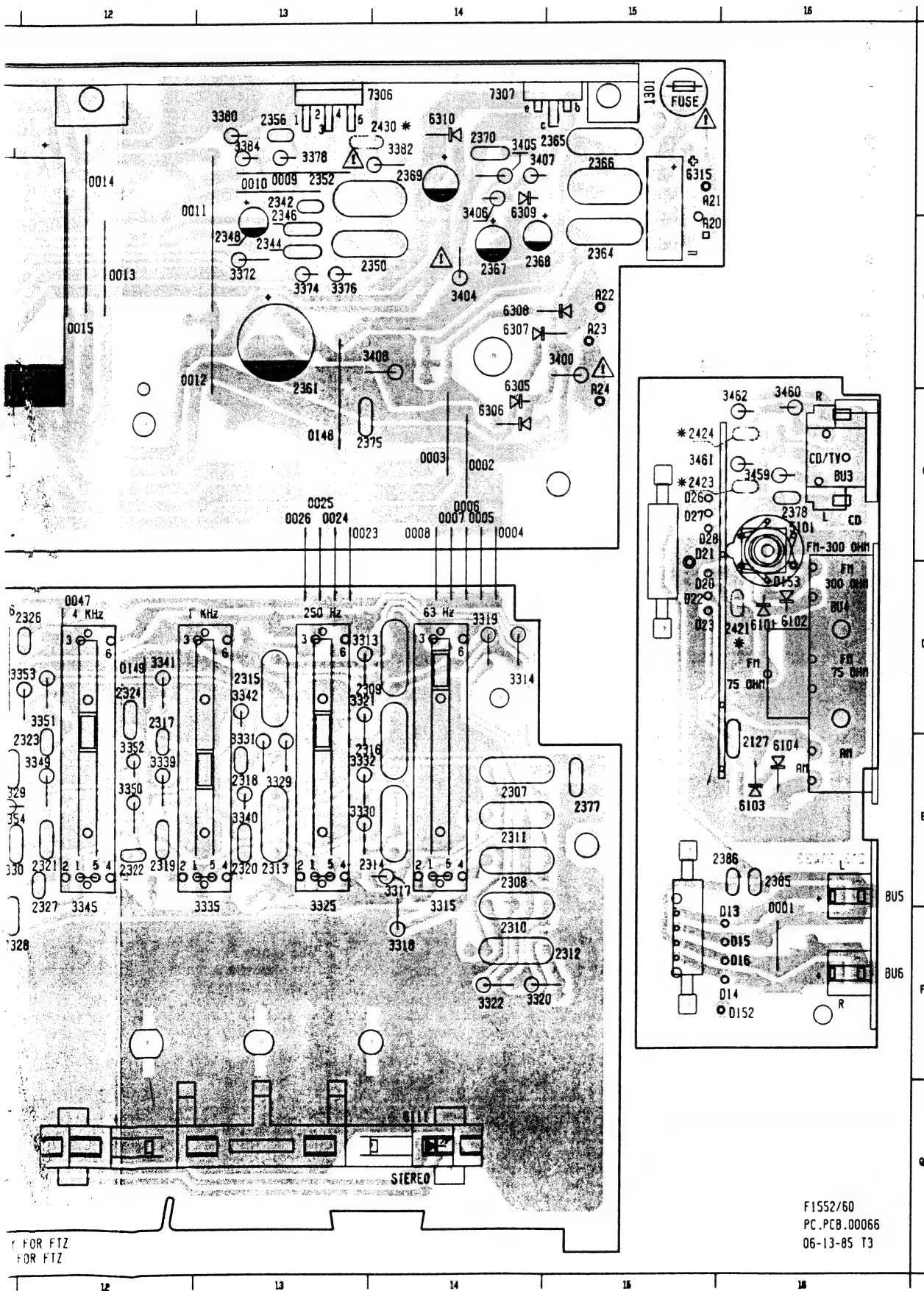
C mV meter

DC   
V  $\pm$  30 mV

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F1552/60  
PC.PCB.00066  
06-13-85 T3



# **I Misure e regolazioni elettriche "Recorder"**

- A** – La deviazione massima di velocità è  $\pm 2\%$ . Inoltre, può essere rilevato il wow e flutter.

– Questo valore non deve eccedere dello 0,35%.

**B** – Collegare lo strumento di servizio al connettore di uscita di una cassa acustica dell'apparecchio.

– Posizionare l'apparecchio in riproduzione e usare la cassetta test a 50 Hz.

– Regolare la velocità del motore (R), per la minima deviazione dello strumento.

**C** – Per necessità può essere usata una cassetta di alta qualità al ferro (normale).
- D** – Se la regolazione è corretta la curva di risposta in frequenza sarà simile alla curva b in Fig. 2 (distorsione  $\leq 5\%$ ).

**E** – Mettere il C.A. fuori funzionamento cortocircuitando il condensatore 2759.

**F** – Montare una resistenza di 20E fra il punto 2(4) di K2 (K102) e A93 (A94).

## **Recorder A and B**

Adjustment	Cassette	Recorder in position SK..	Apply signal to	Measure on	Read on	Adjust with	Adjust to
Playback speed Method 1 or Method 2	3150 Hz part of SBC420Fe	PLAY	–	Loudspeaker output or 12 13	Wow and flutter meter	Trimpotmeter R at the back of the motor	A
	Test cassette set 801/CCS	PLAY	–	Loudspeaker output	indicator on test set	Trimpotmeter R at the back of the motor	B
Azimuth R/P head	8 kHz part of SBC420Fe	PLAY	–	12 13	AC mV meter or oscilloscope	Left screw on R/P head	Max. output
Static playback	–	PLAY F only rec B	K (L) A M (N) B 170 mV-315 Hz via 20 kΩ	12 13	AC mV meter > 100 mV	–	
Playback sensitivity	315 Hz-0 dB part of SBC420Fe	PLAY	–	12 13	AC mV meter > 300 mV	–	
BIAS oscillator frequency only rec. A	Any cassette	RIF SK-76 OFF REC+PLAY	–	11	Frequency counter	5751	55 kHz
Target value BIAS only rec. A	SBC420Fe side-2 C	PLAY	–	9 10	AC mV meter	3769	9 mV
BIAS only rec. A	SBC420Fe side-2 C	REC+PLAY	1 kHz R (S) E		AC mV meter	LF generator	12 mV
			63 Hz 250 Hz 6.3 Hz 10 kHz	Record a number of frequencies (same input voltage)			
	Rewind recording made	PLAY		12 13	AC mV meter		See graph Fig. 1 if necessary repeat adjustment D

## **Record player**

Adjustment	Service Manual	Record player position SK		Read on	Adjust with	Adjust to
Speed	F7046	SK-H 33 1/3 rpm 45 rpm		Stroboscope	R3603 R3602	33 1/3 rpm 45 rpm

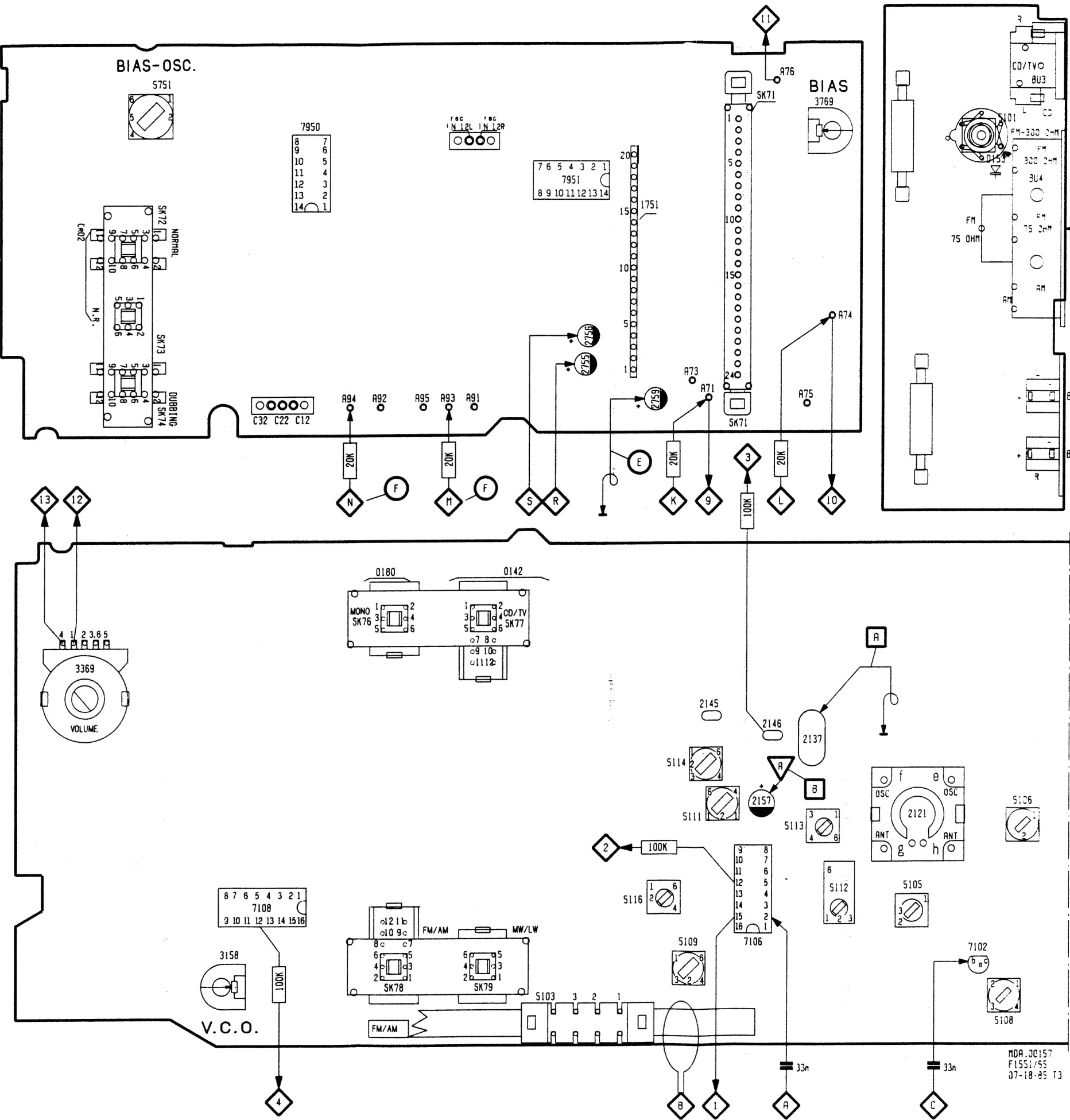
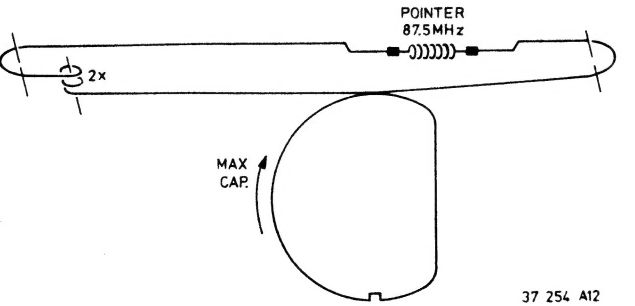
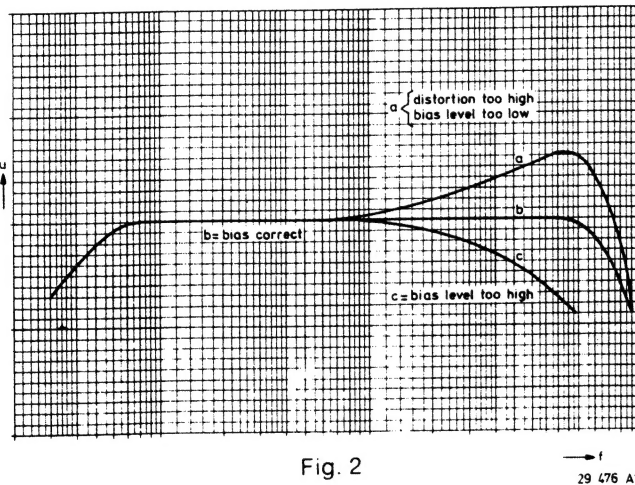
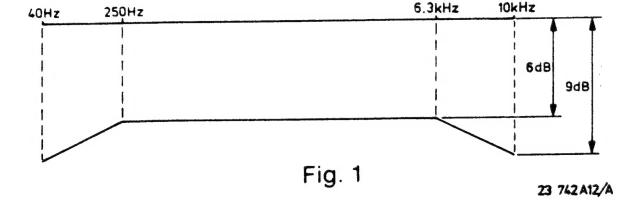
Electrical measurements and adjustments recorder and record player

General conditions recorder

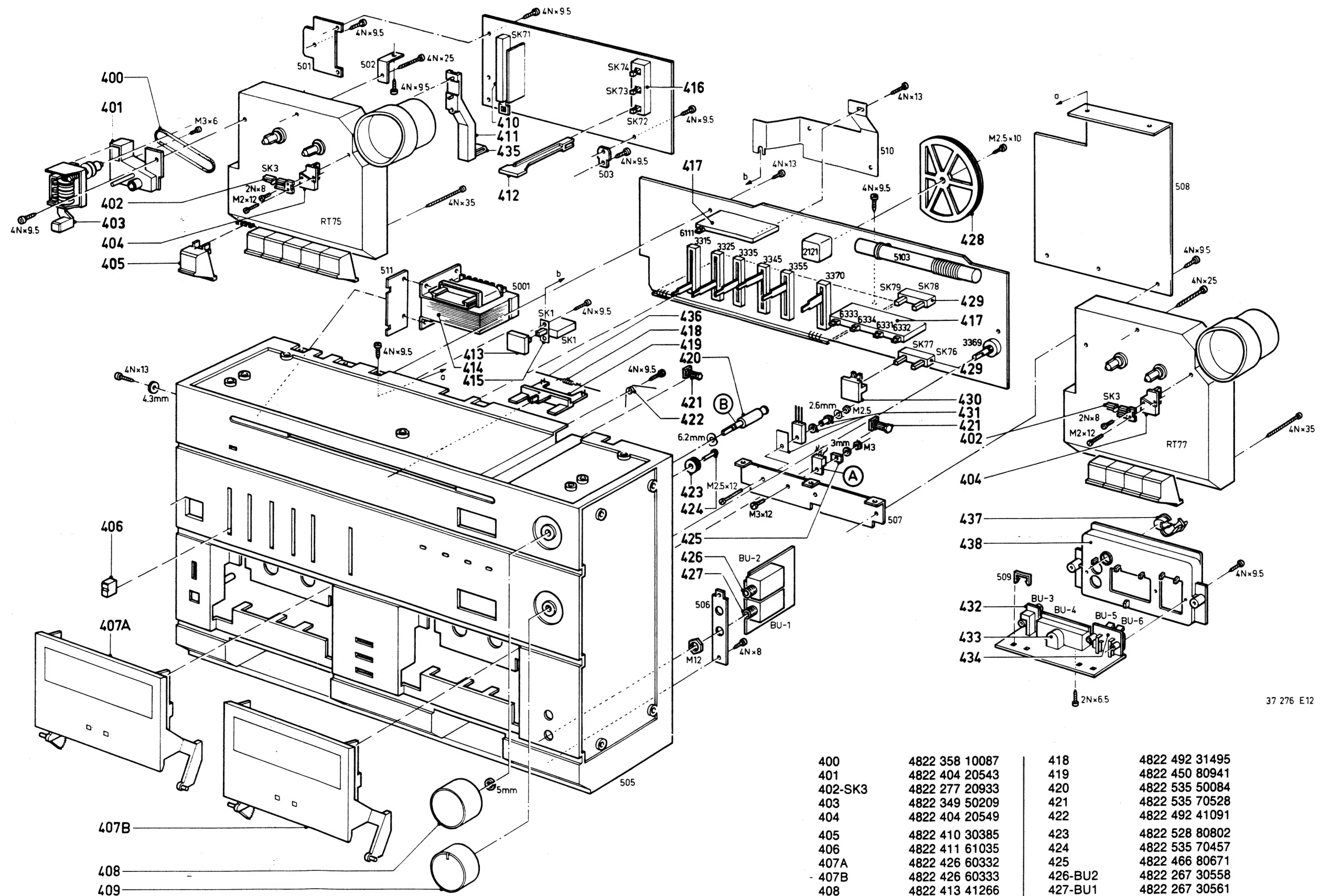
- Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleaned.
- The measurements and adjustments are related to the left-hand channel.
- The corresponding test points and adjusting elements for the right-hand channel are given in brackets.
- The voltages have been measured relative to earth.

Required test equipment and test cassettes

- AF generator
- AC mV meter
- Wow and flutter meter
- Multi meter
- Frequency counter
- Cassette service set 801CSS 4822 395 30078
- Universal test cassette SBC420Fe 4822 397 30071



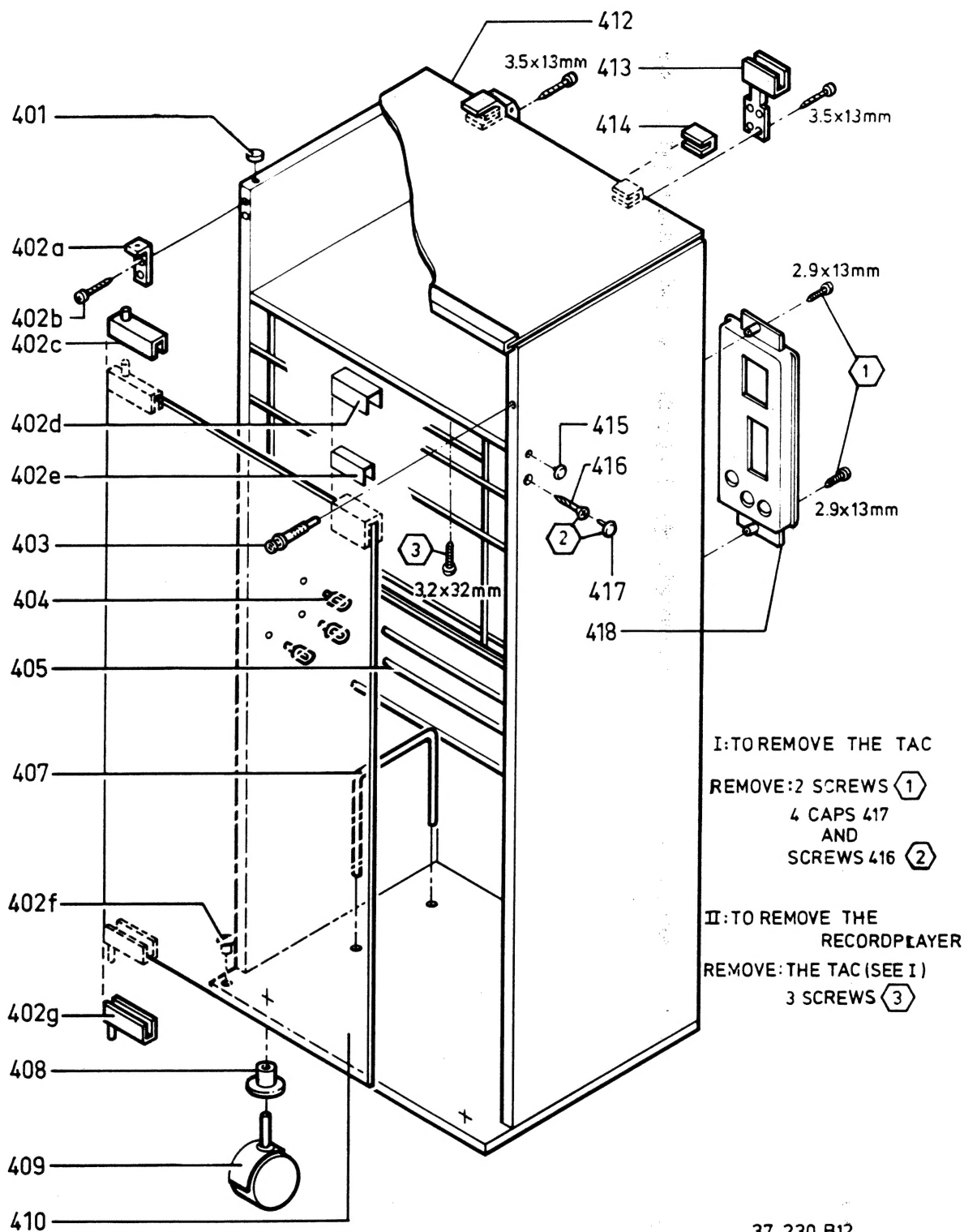




- (A) Silicone grease 5322 390 20019  
 (B) Shell Alvania 2 4822 389 10001

400	4822 358 10087	418	4822 492 31495
401	4822 404 20543	419	4822 450 80941
402-SK3	4822 277 20933	420	4822 535 50084
403	4822 349 50209	421	4822 535 70528
404	4822 404 20549	422	4822 492 41091
405	4822 410 30385	423	4822 528 80802
406	4822 411 61035	424	4822 535 70457
407A	4822 426 60332	425	4822 466 80671
407B	4822 426 60333	426-BU2	4822 267 30558
408	4822 413 41266	427-BU1	4822 267 30561
409	4822 413 41267	428	4822 528 80888
410-SK71	4822 277 30709	429-SK76 ÷ 79	4822 276 20325
411	4822 404 20576	430	4822 410 30386
412	4822 410 30426	431	4822 310 30559
413	4822 410 30387	432-BU3	4822 267 30552
413/94	4822 410 24285	433-BU4	4822 265 40145
414	4822 146 21028	434-BU5,6	4822 290 80609
415-SK1	4822 276 11263	435	4822 492 63178
416-SK72 ÷ 74	4822 276 30325	436	4822 321 30213
417	4822 255 40374	437	4822 325 50125
		438	4822 464 70341




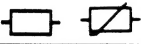




37 276 E12



37 230 B12

401	4822 462 71344	407	4822 404 20581	413	4822 417 10833
402	4822 310 20347	408	4822 462 71345	414	4822 466 61049
403	4822 417 41004	409	4822 528 70428	415	4822 462 71346
404	4822 462 71359	410	4822 450 60515	416	4822 502 30367
405	4822 535 91832	412	4822 450 60513	417	4822 462 71346



							
2117	Plate cap.	22 pF N470	4822 122 32076	BAX14		4822 130 34193	
2120	Plate cap.	27 pF N330	4822 122 31234	BA220		4822 130 34221	
2121	Varco		4822 125 50172	BA317		4822 130 30847	
2136	Miopoco	365 pF 630 V	4822 121 50803	BB119		4822 130 31273	
2138	Plate cap.	82 pF N1500	4822 122 31309	BZX79/C16		4822 130 34268	
2139	Miopoco	324 pF 630 V	4822 121 50542	BZX79/C20		4822 130 34499	
2140	Plate cap.	18 pF N1500	5322 122 34146	BZX79/C6V2		4822 130 34167	
2145	Plate cap.	180 pF N1500	4822 122 32106	BZX79/C8V2		4822 130 34382	
2146	Plate cap.	180 pF N1500	4822 122 32106	SLP151B50C red		4822 130 32323	
2147	Plate cap.	180 pF N1500	4822 122 32106	SLP251B50C green		4822 130 32057	
2166	Plate cap.	82 pF N1500	4822 122 31309	1N4148		4822 130 30621	
2167	Plate cap.	180 pF N1500	4822 122 32106	2KBP02-7001		4822 130 50363	
2168	Plate cap.	82 pF N1500	4822 122 31309				
2341	Plate cap.	100 pF N1500	4822 122 31081				
2342	Plate cap.	100 pF N1500	4822 122 31081	BC548		4822 130 40938	
2355	Plate cap.	100 pF N1500	4822 122 31081	BC548B		4822 130 40937	
2405	Plate cap.	150 pF N470	4822 122 32443	BC548C		4822 130 44196	
2406	Plate cap.	150 pF N470	4822 122 32443	BC549B		4822 130 40936	
2765	Plate cap.	180 pF N1500	5322 122 34232	BC549C		4822 130 44246	
2766	Plate cap.	180 pF N1500	5322 122 34232	BC558B		4822 130 44197	
				BD675		5322 130 44786	
				BF241		4822 130 40898	
3158	Potm. trimming	4k7 Lin	4822 100 10036	BF494		4822 130 44195	
3315	Potm. trimming	100k Lin	4822 105 10578	BF494B		4822 130 41376	
3325	Potm. trimming	100k Lin	4822 105 10578	2SK241GR+Y		4822 130 42217	
3335	Potm. trimming	100k Lin	4822 105 10578				
3345	Potm. trimming	100k Lin	4822 105 10578				
3355	Potm. slide	100k Lin	4822 105 10578	5001	Mains transformer	4822 146 21028	
3369	Potm.	100k volume	4822 101 20749	5101	Aerial Trafo L-2M7-D	4822 148 80183	
3370	Balance		4822 105 10579	5102	Aerial Trafo Sym.	4822 157 51233	
3381	Fuse res.	1E NFR25	4822 111 30483	5103	Ferroceptor	4822 158 60515	
3382	Fuse res.	1E NFR25	4822 111 30483	5104	Coil	4822 156 10641	
3400	Fuse res.	1E NFR25	4822 111 30483	5105	Coil RF	4822 157 51693	
3404	Fuse res.	4E7 NFR30	4822 116 52448	5106	Coil Osc.	4822 157 51618	
3769	Potm. trimming	100k	4822 100 10052	5107	Coil 0.47 µH	4822 157 50967	
				5108	Coil IF 10.7 MHz	4822 153 50206	
				5109	Aerial Trafo LW	4822 156 30564	
HEF4016B		5322 209 14119		5110	Res. cer. 10.7 MHz	4822 242 70249	
NJM4558CD		4822 209 81054		5111	Coil FM	4822 157 51615	
TDA2030VH		4822 209 82972		5112	Filter IF 450 kHz	4822 157 51617	
TEA5570		4822 209 81563		5113	Coil Osc. AM	4822 157 51616	
UPC1197C		4822 209 81544		5114	Coil FM 10.7 MHz	4822 153 50208	
				5115	Res. Cer. 10.7 MHz	4822 242 70249	
				5116	Coil IF AM	4822 157 51708	
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.				5117	Coil	4822 157 51842	
				5118	Coil	4822 157 50964	
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.				5751	Coil Osc.	4822 156 20946	
				<b>Miscellaneous</b>			
				1301	Fuse T 3.15A Wickman	4822 253 10048	
				1751	Cass. Rec. CRE-3	4822 218 10158	
				F	Thermal fuse for mains transformer	4822 252 20007	